34508
S/169/62/000/002/063/072
D228/D301

3.5720

AUTHOR: Sharonov, V. V.

TITLE: Visual photometry of noctilucent clouds

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1962, 23, ab-
stract 2G149 (Tr. VI Soveshcheniya po serebristym ob-
lakam, 1959, Riga, AN LatvSSR, 1961, 13-18)

TEXT: The results are stated for photometric observations of noc-
tilucent clouds, carried out by a visual method at the atmospheric-
optical station of Leningradskiy gosudarstvennyy universitet (Le-
ningrad State University) in the town of Petrovorets in the sum-
mer of 1959. An astronomic polarization photometer of the "Assembi"
berg system, fixed on a Zeiss ground telescope of the Rosen-
type, was used to measure the brightness of noctilucent clouds and
the twilight-sky background. A small circular field of comparison,
projecting onto the background of the objects observable in the
field of vision, was visible at the center of the visual field in
the photometer's ocular. The color of the field of comparison was

Card 1/4

Visual photometry of ...

adjusted to the color of the twilight sky by means of a blue wedge. The essence of the observations consisted in the fact that the instrument was sighted on a selected cloud section, and that five adjustments, which gave an average reading for α_c on the analyzer's circle, were made to the brightness parity. Then the device was sighted on the nearest cloud-free section of sky, and 5 readings, the average of which is denoted by α_{sk}, were again made. The elevation and azimuth of the measured section were measured after this by means of a theodolite. The ultimate aim of the work was to obtain brightness values on the absolute system, namely those pertaining to the unit which is adopted for the brightness of an absolutely white screen, normal to the sun's rays and situated at the boundary of the atmosphere. Since the brightnesses of both clouds and the screen are determined by the scattering of solar rays, the cloud brightness expressed in such a system can be termed the "albedo" and designated through ρ:

Card 2/4

Visual photometry of ...

where ρ_m is the albedo of the moon's limb, B'_c is the apparent brightness of the noctilucent cloud, B_{sk} is the apparent brightness of the sky, B'_m is the apparent brightness of the moon, and T is the filtration coefficient of the gray light-filter. The values obtained for ρ range approximately from 1 x 10^{-6} to 23 x 10^{-6}. In relation to the cloudless daytime sky their values amount to ~.0^{-5}, which also confirms the complete impossibility of seeing noctilucent clouds by day. [Abstracter's note: Complete translation.]

Card 4/4

S/035/62/000/005/059/098
A055/A101

AUTHOR: Sharonov, V. V.

TITLE: The present state of the problem of determination of the light constant for the Sun and the Moon

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 5, 1962, 59, abstract 5A439 (V sb. "Aktinometriya i atmosfern. optika". Leningrad, Gidrometeoizdat, 1961, 112 - 113)

TEXT: The author gives the most probable values of the light constant of the Sun (134,000 lux) and of the Moon 0.342 lux), obtained after a critical review of all the determinations that have been published. The high random error in the quoted numbers (up to ±10%) is pointed out by the author; this error is due to the insufficient precision of the extra-atmospheric values of illumination, obtained by extrapolation with the aid of the Bouguer "long" method. In this connection, the author considers that a further accumulation of data obtained by the old methods cannot lead to any substantial progress; therefore, measurements of solar and lunar light must be made outside of the atmosphere.
[Abstracter's note: Complete translation] I. Lebedeva

Card 1/1

34512
S/169/62/000/002/067/072
D228/D301

3.5120

AUTHOR: Sharonov, V. V.

TITLE: Subjects and problems in work on noctilucent clouds on the ending of the IGY and IGC

PERIODICAL: Referativnyy zhurnal Geofizika, no. 2, 1962, 24-25, abstract 2G153 (Tr. VI Soveshchaniya po serebristym oblakam, 1959, Riga, AN LatvSSR, 1961, 163-168)

TEXT: Some directions of future research on noctilucent clouds are considered on the basis of the work carried out during the IGY and IGC period. The visual registration of noctilucent-cloud appearances, in pursuit of the problem of studying these formations from the climatologic point of view, is foreseen. The next aim consists of the fact that the preliminary processing of the results of the observations for 1957, 1958, and 1959 has to be completed. Such processing consists of calculating for all stations the number of nights and the number of separate observational periods during which noctilucent clouds were visible. After this the problem arises of

Subjects and problems ...

changing from the apparent to the true distribution of the clouds, i.e. of establishing the frequency of the appearance of these objects. Since the work fulfilled along the lines of the IGY and IGC is part of the international research program, the results obtained should be placed at the disposal of the scientists of all countries on an exchange basis. Such an exchange of material is being made through International Data Centers (IDC) which accomplish the collection, storage and propagation of the results of all kinds of observations. The results of noctilucent-cloud observations are being transmitted to the IDC in two forms. The former, denoted as "form IGY-1-s", contains the information for every station about the number of observational periods in which the degree of the dawn sector's enclosure by clouds of the underlying layers was expressed in a definite system. The presented material can be used for various statistical and climatologic investigations of the conditions of noctilucent-cloud appearances. The latter, denoted as "form IGY-2-s", is a catalog of all instances of visibility, i.e. of all observational periods when noctilucent clouds were vi-

Card 2/4

Subjects and problems ...

sible at a given station during a given month. Analogous data obtained at foreign stations will permit the fulfillment of the general study of the conditions of cloud appearances throughout the world; this also constitutes the final aim of all work on the statistics and climatology of noctilucent clouds being carried out in connexion with the IGY-IGC. Large quantities of photographs of noctilucent clouds were obtained in the IGY-IGC period. These photographs should be processed in such a way that it would be possible to obtain and plot on a geographic map the contours of both the whole region, occupied by noctilucent clouds, and the latter's separate structural details. The derivation of the coordinates of the cloud-field details by photographic means is only possible if there are on the photographs object images -- orienting points, whose absolute coordinate values (elevation and azimuth) are measured by a theodolite. Such measurements should be completed quickly, since the orienting points may either cease to exist or else be displaced. Then it is necessary to develop a simple, convenient, and sufficiently accurate method of determining the elevations and azimuths of separate cloud-field details from photo-

Card 3/4

Subjects and problems ...

S/169/62/000/002/067/072
D228/D301

graphs, on which there are orienting points, and to discover a means of changing from the indicated coordinates to the geographic latitudes and longitudes of those points of the ground surface for which these details occur at the zenith. /Abstracter's note: Complete translation./

Card 4/4

20497
S/025/61/000/003/007/012
A166/A127

3,1550(1057,1062,1129)

AUTHOR: Sharonov, V. V., Professor; Director (see Ass.)

TITLE: Three questions - twenty-four answers

PERIODICAL: Nauka i zhizn', no. 3, 1961, 25

TEXT: For the author the comparison of the macroscopic structure of the surface on both lunar hemispheres seems to be a most interesting study. Following Galileo's views, he believes, on the basis of photometric studies that the Moon's structure is rough, with steep walls and sharp, serrated edges. Photos of the reverse side indicate that this side is just as pitted and serrated as the visible one. Since dust could not maintain the physical shapes recorded on the Moon's surface, and any material would slide down the slopes beyond a certain angle, the Moon's surface is considered to be composed of solid material and not of a thick layer of dust, as had been previously believed. Furthermore, the time

Card 1/2

20497
S/025/61/000/003/007/012
A166/A127

Three questions - twenty-four answers

should not - be considered too far off when automatic lunar robot rockets will take live pictures upon impact and will haul samples of lunar surface material back to Earth.

ASSOCIATION: Astronomicheskaya observatoriya Leningradskogo Universiteta (Astronomical Observatory of the Leningrad University)

Card 2/2

38814
S/035/62/000/006/031/064
A001/A101

3.1550

AUTHOR: Sharonov, V. V.

TITLE: Comparison of limonite-colored clastic materials with the Martian surface

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 6, 1962, 63, abstract 6A470 ("Izv. Komis. po fiz. planet", 1961, no. 3, 74-75)

TEXT: Colorimetric measurements of various types of red-colored sands are presented. It follows from their analysis that not only pure powdered limonite can have the color similar to that characteristic for Mars, but also sands and soils pigmented by limonite.

Author's summary

[Abstracter's note: Complete translation]

Card 1/1

S/035/62/000/006/019/064
A001/A101

AUTHOR: Sharonov, V. V.

TITLE: Visual colorimetry of the solar corona during the eclipse of February 15, 1961

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 6, 1962, 57, abstract 6A423 ("Astron. tsirkulyar", 1961, iyulya 10, no. 223, 4 - 7)

TEXT: Information is given on the results of one-dimensional visual colorimetry of the bright inner zone of the corona during the total solar eclipse of February 15, 1961. A Rosenberg astrophotometer was used for measurements. The eclipse was observed from a TU-104 (TU-104) aircraft. Equipment and observation methods are described. The following data have been obtained: D = +0.104 (index of yellowness); $C_{10,000} - C_{cl} = -1.28$; $C_o - C_{cl} = -0.67$; $C_{10,000} - C_o = -0.60$; where $C_{10,000}$, C_{cl}, C_o are color indices at 10-km altitude, at cloudy sky and at ground surface, respectively.

M. Frolov

[Abstracter's note: Complete translation]

Card 1/1

S/269/63/000/004/005/030
A001/A101

AUTHOR: Sharonov, V. V.

TITLE: Some considerations on organization of observations of noctilucent clouds in the next years

PERIODICAL: Referativnyy zhurnal, Astronomiya, no. 4, 1963, 27 - 28, abstract 4.51.271 ("Tr. Soveshchaniya po serebristym oblakam, 1961, v. 3", Tallin, 1962, 178 - 184, English summary)

TEXT: The author proposes a scheme for observations of noctilucent clouds. 1) Observations should be carried out only during clear or almost clear weather; 2) Duration of time, expressed in days, hours or terms of records in which the number of occurrence of noctilucent clouds was observed, should be explicitly noted. The observational program should be somewhat different for individual observers and amateur teams, but the method of processing of observations should secure, at least approximately, the frequency value of appearance of noctilucent clouds. Attention of observer teams should be concentrated on observations with instruments and on photographing noctilucent clouds. Photographs should provide

Card 1/2

S/269/63/000/004/005/030
A001/A101

Some considerations on organization of...

the possibility of measuring coordinates and obtaining cloud projections onto the ground surface.

N. Rudometkina

[Abstracter's note: Complete translation]

Card 2/2

SHARONOV, V.V.

Mikhail Vasil'evich Lomonosov as an astronomer. Vest.LGU 16 no.19:I-VII '61. (MIRA 14:10)
(Astronomers, Russian)

SHARONOV, V.V.

Observations of the total solar eclipse of 15 February 1961 from an airplane. Vest.LGU 16 no.19:176-179 '61. (MIRA 14:10)
(Eclipses, Solar)

20880
S/033/61/038/002/004/011
E032/E514

3,1550 (1057, 1062, 1129)

AUTHOR: Sharonov, V. V.

TITLE: A Lithological Interpretation of the Photometric and Colorimetric Studies of Mars

PERIODICAL: Astronomicheskiy zhurnal, 1961, Vol.38,No.2, pp.267-272

TEXT: The albedo of isolated parts of the Martian surface was measured using a visual polarizing astrophotometer. The method employed was similar to that described earlier by the present author (Ref.1) and N. N. Sytinskaya (Ref.2). The method consists in the comparison of the brightness of details on the Martian disc with the brightness of a white scattering screen having a known brightness coefficient and illuminated by direct solar radiation only. The screen was placed at a sufficiently large distance from the telescope. Such observations were carried out in 1956 using the visual tube of the normal astrograph of the Tashkentskaya astronomicheskaya observatoriya (Tashkent Astronomical Observatory). The colour of the details was measured with the same instrument using a blue wedge. In 1958 the observations were repeated at Leningrad. Since the climatic conditions precluded

Card 1/3

A Lithological Interpretation... S/033/61/038/002/004/011
E032/E514

direct comparison with solar light, the bright limb of the Moon was used as the comparison object. The results obtained are practically identical with those obtained in 1956 in Tashkent (V.V.Sharonov, Ref.6). Specimens of minerals and rocks were then examined in the laboratory using the same instrument in conjunction with a short-focus objective. The specimens were illuminated by a special lamp, whose output was similar to solar radiation. The results of the photometric and colorimetric observations of the Martian surface made during 1956 and 1958 were then compared with the results obtained for these specimens. It was found that the albedo and the colour excess of sand and other materials in the top layers of terrestrial deserts and also red coloured rocks of the Permian formation and the dense varieties of limonite are not similar to the Martian continents, since the red colour of the latter is more saturated. Only ocher, i.e. a variety of limonite, was found to be approximately similar in colour to the Martian disc. It is suggested that the Martian continents are covered by a layer of loose, soft silt, consisting either of particles of pure limonite or some other particles containing large amounts of this

A Lithological Interpretation... S/033/61/038/002/004/011
E032/E514

mineral. The latter when convected in the atmosphere produce the orange haze, the development of which was characteristic of the 1956 opposition. Limonite dust particles are very small and their sedimentation rate is low. It follows that the orange haze which may be due to them should be very persistent and this is in agreement with the 1956 observations. There are 1 table and 13 references, 10 Soviet and 3 non-Soviet.

ASSOCIATION: Astronomicheskaya observatoriya Leningradskogo gos. universiteta (Astronomical Observatory of the Leningrad State University)

SUBMITTED: July 2, 1960

Card 3/3

ZVEREV, M.S.; SHARONOV, V.V., prof.; MAGNITSKIY, V.A., prof.; SHRUTKA, Guntram [Schrutka, Guntram], prof.; YURI, Garol'd [Urey, Harold C.], laureat Nobelevskoy premii (SShA); KOPAL, Zdenek, prof.; KOZEL, Karol, prof.; ROSH, Zhan [Rösch, J.]

Twenty-two answers to three questions. Nauka i zhizn' 28 no.3:23,25, 29, 30-32 Mr '61. (MIRA 14:3)

1. Chlen-korrespondent AN SSSR (for Zverev). 2. Direktor astronomicheskoy observatorii Leningradskogo universiteta (for Sharonov). 3. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (for Mangitskiy). 4. Venskiy universitet (Avstriya) (for Shrutka). 5. Manchesterskiy universitet (Angliya) (for Kopal). 6. Krakovskiy universitet (Pol'sha) (for Kozel). 7. Observatoriya Pik-dyu-Midi (Frantsiya) (for Rosh).

(Moon)

BOBROV, M. S., Astronomical Council, Academy of Sciences USSR [1962] - "Optics and geometry in the matter of Saturn's rings"

PROKOF'YEV, Vladimir K., Crimean Astrophysical Laboratory imeni G. A. Shayn [1962] - "On the presence of oxygen in the atmosphere of Venus"

SALOMONOVICH, A. Ye., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR, and KUZ'MIN, Arkadiy D., Radio Astronomy Laboratory, Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR - "Observations of the radioemission of Venus and Jupiter on the wave of 8 mm."

SALOMONOVICH, A. Ye., KUZ'MIN, Arkadiy D., and KISLYAKOV, A. G. - "Radioemission of Venus on the wave of 4 mm."

SALOMONOVICH, A. Ye., KUZ'MIN, Arkadiy D., BIRYUKOVA, V. P., and SHAYLOVSKIY, I. V. - "Observations of the radioemission of Venus and Jupiter on the wave of 3.3 cm."

SALOMONOVICH, A. Ye., and KUZ'MIN, A. D. - "Radioemission of Venus on the wave of 9.6 cm."

SALOMONOVICH, A. Ye., and KUZ'MIN, A. D. - "Results of the observations of radioemission of Venus in 1961"

SHARONOV, Vsevolod V., Director, Astronomical Observatory, Leningrad State University [1961 position] - "Probable state of the surface and atmosphere of the planet Mars according to photometric and colorimetric data"

VSEKHSVYATSKIY, Sergey K., Head of the Chair of Astronomy, Kiev State University [1961 position] - "Nature of Saturn's rings and signs of the existence of a ring around Jupiter"

YEZERSKIY, V. I., and BARABASHEV, N. P., Director, Kharkov Astronomical Observatory, Kharkov State University [1960 position] - "Optical properties of the atmosphere and surface of Mars according to photometric and spectrophotometric observations carried out at the Kharkov University Observatory"

ort to be submitted for the 11th Intl. Astrophysics Symposium, Belgian t. of Astrophysics, Colnte-Sclonsin, Belgium, 9-11 Jul 1962.

SHARONOV, V.V.

Some results of observations of Venus in the eastern elongation in 1961. Astron.tsir. no.225:6-7 S '61. (MIRA 16:1)

1. Astronomicheskaya observatoriya Leningradskogo gosudarstvennogo universiteta.

(Venus (Planet))

S/722/62/000/000/00[illegible]/009

AUTHOR: Sharonov, V. V.

TITLE: Results of new investigations of Mars based on observations during the oppositions of 1956 and 1958.

SOURCE: Trudy Tret'yego s"yezda Vsesoyuznogo astronomo-geodezicheskogo obshchestva, 6-11 Aprelya 1960 g. Moscow. Izdatel'stvo Akademii nauk SSSR. 1962, 121-135.

TEXT: During the 1958 opposition the Crimean Astrophysical Observatory employed an MTM-500 reflector telescope equipped with an electron-optical transformer (equivalent focal distance 60 m) to produce a 7.5-mm image of Mars in the spectral regions of 840 and 983 millimicron for photometric evaluation. The U.S. Naval Observatory first employed radioastronomy to detect the apparently purely thermal radioemission of Mars, but did not encounter any of the flashes which, on Venus and Jupiter, had been attributed to lightning discharges. Photoelectric photometry was performed by the Alma-Ata and Pulkovo Observatories. Phenomena first detected in 1956 were: Extensive, stable, atmospheric obscurations of yellow hue which manifested virtually no contrast against the background of the continents. It was concluded by many observers that continental mineral dust formed the aerosol which, elsewhere, obscured the background of the darker and more greenish seas. The shrinking and disappearance of the Antarctic ice cap is

Card 1/3

described in detail as observed by Bronshten in Volgograd and Sandner in Germany during June and July. The sudden disappearance, about September 1, of the remaining light-colored polar cover is interpreted in the light of four hypotheses, of which the obscuration by a dust cloud appears most likely. The abnormal bright spot in the Syrgyre and Noachis regions at the end of August 1956 are attributed to a reddish atmospheric fog. Details of the USSR observatories participating in the observations, and their publications, are listed. Details on variation of albedo with wave length are set forth. The seasonal wave of darkening which moves from the vernal pole toward the equator and some 22° into the winter hemisphere is described. Colorimetric photointerpretation indicates that the continents may have a reddish sandstone surface and not a rosy-pinkish sandy one. Comparative measurements at the planetary-laboratory facility at Leningrad University showed that the limonites ($Fe_2O_3 + nH_2O$), and among them especially the ochre variety, provide the closest approximation to the appearance of the Martian surface. However, some limonite sands, and more especially the "terra rossa" of certain Adriatic shores, also manifest a similar color saturation. The continents of Mars are, therefore, apparently covered with a soft, flour-like, ferrous limonite that is readily picked up by the wind. Suggestions on the possible areechemical formation of such dust are set forth. The discussion on the possible existence of a vegetative cover on the seas is based on Sinton's (Harvard) studies, but the possibility of absorption lines similar to Sinton's

lines, but produced by purely mineral surfaces, is pointed out. No startling new observations of "canals" or of other features that might not be of purely natural origin are noted. U.S. observations only are reported relative to the (unsuccessful) spectrographic search for oxygen and water vapor in the Martian atmosphere in the visible range. Theoretical studies, among them those by Lebedinskiy, indicate a maximum precipitable water content of only hundredths of a mm on Mars (against some 10 cm in the driest areas on earth). While agreement is reported on the composition of the yellowish dust clouds, other whitish clouds which are formed and dissipated in the manner of condensation aerosols is debatable; most probably they are cirrus-like water-ice clouds for which the available scant water vapor is adequate. Kozyrev's hypothesis that the surface of Mars is actually grey, and that the reddish hue is caused by a light-filtering action either of an inorganic component of the Martian atmosphere or by some sort of organic aerial plankton, is rejected. The paper has 4 figures, 3 tables, 18 Soviet and 17 Western (English- and French-language) references.

ASSOCIATION: None given.

Card 3/3

SHARONOV, V.V.

Visual-colorimetric study of the lunar surface. Astron.zhur. 39 no.1:87-92 Ja-F '62. (MIRA 15:2)

1. Astronomicheskaya observatoriya Leningradskogo gosudarstvennogo universiteta.
(Moon--Surface)

SHARONOV, V.V.

Dust Covers on the Surface of Planets and Satellites

Report to be submitted for the 4th International Space Science Symposium (COSPAR)Warsaw, 2-12 June 63

S/043/63/000/001/011/011
D263/D307

AUTHOR: Sharonov, V. V.

TITLE: An astronomical expedition into the active volcanic region of Kamchatka

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 1, 1963, 156-158

TEXT: An expedition organized by Astronomicheskiy sovet AN SSSR (Astronomical Council of the AS USSR), led by N. B. Divari of Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute),and including Professor V. V. Sharonov of LGU and Engineer A. V. Bleshchunov, was sent in the summer of 1962 to the active volcanic region of Kamchatka. The objectives were to study the modern volcanic cover deposits in situ and to compare their reflectivity with those on the surface of the Moon. The work was supported by the Laboratoriya planetnoy astronomii

Card 1/3

An astronomical expedition...

AOLGU (Planetary Astronomy Laboratory of the AOLGU). The expedition was aided by the Kamchatskaya geologicheskaya i geofizcheskaya observatoriya (Kamchatka Geological and Geophysical Observatory) at Petropavlovsk, and Kamchatskaya vulkanicheskaya stantsiya (Kamchatka Volcanic Station) at Klyuchi. The work was initially centered on the Avachinskiy and Koryakskiy volcanos. Photometric reflection studies by N. S. Orlova's method were limited by wet weather. Samples were therefore sent back to be tested at the AOLGU. In the second region studied, on the slope of the Klyuchevskiy volcano, at the Karpinskiy, Zavaritskiy, Krasheninnikov, Levinson-Lessing, Obruchev and other craters, the weather was also unfavorable for field studies, and samples were again collected for laboratory tests. The main object of these tests was to discover whether the samples possess corresponding optical properties to those of the lunar rocks. The most lunar-like rock was found to be the gray-black volcanic slag with an albedo of 0.02 - 0.1. This rock is widely distributed. Brown and brick-red slags are also common. The overall colors

Card 2/3

An astronomical expedition...

could be matched to that of any area on the Moon. The porous, spongy structure of the slag is also similar to that expected in lunar rocks. Dark color, texture and low albedo (~0.15) are also characteristic of basaltic and andesitic lava flows, corresponding to the lunar surface. Volcanic ash bears little similarity to lunar material. The surface optical properties are determined by the overlying pyroclastic material.

Card 3/3

S/169/63/000/005/012/042
D263/D307

AUTHOR: Sharonov, V.V.

TITLE: Some considerations of the organization of observations of noctilucent clouds in the next few years

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 3, 1963, 33, abstract 3A192 (Tr. Soveshaniya po serebristym oblakam, 1961, T.3, Tallin, 1962, 178-184 (Eng. summary))

TEXT: Collection of statistical data on the frequency of appearance of noctilucent clouds in various years and seasons at various latitudes may be carried out by the following plan: 1) Observations will be carried out only in clear or almost clear weather (letters A and B of previous programs. 2) Observations will be such as to allow a determination of the duration (expressed in dates, hours, or times of recordings) to which the recorded sightings of noctilucent clouds are referred. The observation program should be a little different for individual observers and for amateur groups, but the plan and processing of the observations should be chosen in such a

Card 1/2

S/169/63/000/003/012/042
D263/D307

Some considerations ...

way that it is possible to determine, even approximately, the frequency of the appearance of noctilucent clouds, free from such factors as activity of the observer and cloudiness. Attention of observational groups should be centered on instrumental observations, first of all on the photography of noctilucent clouds. The photographs may be reserved for the measurement of coordinates and for projection of the clouds on the surface of the Earth. Another use of such photographs is photometric work, requiring more complex operations for calibration and standardization.
[Abstracter's note: Complete translation]

Card 2/2

SHARONOV, V., prof.

What we know about the moon. Av.i kosm. 45 no.4:27-33 Ap '63. (MIRA 16:3)

(Moon)

ACCESSION NR: AR3010374 S/0269/63/000/008/0060/0060

SOURCE: RZh. Astronomiya. Abs. 8.51.432

AUTHOR: Sharonov, V. V.

TITLE: Some conelusions from the photometric comparison of terrestrial volcanic landscapes with the lunar surface

CITED SOURCE: Astron. tsirkulyar, no. 231, noyabrya 4, 1962, 10-12

TOPIC TAGS: Moon, lunar surface, gold dust hypothesis

TRANSLATION: To compare the reflectivity of terrestrial surfaces with those of the Moon, studies were carried out in July-August 1962 pn the slopes of the Avachinskiy and Klyuchevskiy volcanos. The treatment of the photometric measurements has not yet been completed. The following conclusions may now be drawn, however: 1) the greatest resemblance to the lunar surface is offered by volcanic slag which has a very low albedo (0.03-0.1), as well as a similar reflection indicatrix; 2) volcanic ash is sharply distinct from the lunar surface, since it is of light color (albedo 0.25-0.35). In addition, the ash smooths out the

Card 1/2

ACCESSION NR: AR3010374

relief and alters the character of reflection; 3) the results of observations are an argument against the existence of crushed materials on the Moon, and thereby against Gold's dust hypothesis. L. R.

DATE ACQ: 28Aug63 SUB CODE: AS ENCL: 00

Card 2/2

S/2972/63/000/006/0005/0022

ACCESSION NR: AT3012191

AUTHOR: Sharonov, V. V.

TITLE: Problems of climatology of noctilucent clouds

SOURCE: AN SSSR. Mezhduvedomstvenny*y geofizicheskiy komitet. 2 razdel programmy MGG: Meteorologiya. Sb. statey, no. 6, 1963, 5-22

TOPIC TAGS: climatology, noctilucent clouds, International Geophysical Year, meteorological station, visibility, celestial sphere, brightness, twilight, sensitivity threshold, physiological optics

ABSTRACT: The author considers statistical reduction of regular observations of noctilucent clouds made at the SSSR meteorological network of stations during the International Geophysical Year. Visibility conditions are a source of difficulty since the clouds of this type may be observed only during a certain twilight interval, only when the sky is sufficiently clear, and only at stations far south of the lowest points of the clouds. This means that the stations record only a small part of the actual number of noctilucent clouds. And the same cloud may be observed at several stations. In making calculations on appearance frequency of

Card 1/2

ACCESSION NR: AT3012191

noctilucent clouds, it is therefore necessary to consider visibility conditions for such clouds. Only the geometric aspect of visibility of noctilucent clouds, which are in that zone above the earth's surface such that they are above the horizon of a given station and are illuminated by the sun, can be easily solved. A number of different types of diagrammatic maps have been drawn to indicate position of the zone of possible visibility of noctilucent clouds in the celestial sphere at a given point, to show zones on the earth's surface occupied by stations that may see the cloud, and to show zones characterized by the fact that the noctilucent clouds are visible from a given station. Application of the general theory of visibility to noctilucent clouds requires a calculation of brightness contrasts made by cloud brightness together with brightness of the twilight sky and an application of different parameters from the field of physiological optics (particularly the contrast sensitivity threshold of eye vision). A complete and exact solution of this problem is rather difficult at the present time. Orig. art. has: 6 figures and 5 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 220ct63 ENCL: 00

SUB CODE: AS NO REF SOV: 034 OTHER: 007

Card 2/2

SHARONOV, V.V.

Visual colorimetric observations of Mars during the opposition of 1963. Astron.tsir. no.269:3 N '63. (MIRA 17:4)

1. Glavnaya astronomicheskaya observatoriya AN SSSR, Pulkovo.

L 41479-65 EEO-2/EWG(j)/EWT(d)/FSS-2/EWG(r)/EWT(l)/FS(s)/EWT(m)/FS(v)-3/EWP(w)/EEC(n)-2/EWG(v)/EWP(v)/EEC(t)/T-2/EWG(a)-2/EWP(k)/EWG(c)/EWA(h) Po-4/Pe-5/Pq-4/Pac-4/Pf-4/Pae-2/Peb/Pi-4 TT/EM/GW

ACCESSION NR AM5002541 BOOK EXPLOITATION S/ 63 B41

Sharonov, Vsevolod Vasil'yevich (Professor, Doctor of Physics and Mathematics)

The moon: first station on the flight to outer space (Luna - pervaya stantsiya na puti v kosmos), Moscow, Voyenizdat M-va obor. SSSR, 1964, 97 p. illus. 30,000 copies printed. Series note: Nauchno-populyarnaya biblioteka Voyennogo izdatel'stva

TOPIC TAGS: moon

PURPOSE AND COVERAGE: This booklet describes the nature of the moon and the conditions of the lunar surface that would be encountered by an expedition to the moon. The movement of the moon in space, the changes in the lunar phases, and the effect of the moon on the earth are considered. Current information is presented on the structure and the origin of lunar mountains and craters, the lunar climate, and the lunar surface. One chapter is devoted to artificial moons, that is, to moons created by artificial satellites, the results of photography of the back side of the moon, and the prospects for man reaching the moon. The booklet is intended for a mass audience.

TABLE OF CONTENTS:

Card 1/2

L 44479-65
ACCESSION NR AM5002541

SUBMITTED: 25May64 SUB CODE: AA

NO REF SOV: 000 OTHER: 000

Bgs
Card 2/2

L 26939-65 EWT(1)/EWG(v)/EEC(t) Pe-5/Po-4/Pae-2 GW

ACCESSION NR: AP5006009 S/0033/65/042/001/0136/0144

29
18
B

AUTHOR: Sharonov, V. V. (Deceased)

TITLE: Photometric investigation of the presence of outer layers of volcanic origin on the Moon

SOURCE: Astronomicheskiy zhurnal, v. 42, no. 1, 1965, 136-144

TOPIC TAGS: lunar surface, volcanogenic formations, lunar spectrophotometry, meteoric collision

ABSTRACT: The fact that the reflective capacity of the lunar surface is very low and that its mean albedo is smaller than that of sedimentary and ordinary magma rocks suggests that the entire visible surface of the Moon is covered by formations of volcanic origin. To verify this, photometric investigations were made of some of the outer layers in the neighborhood of active terrestrial volcanoes. The data were obtained by expeditions to Kamchatka and Simushir Island. It was found that volcanic sands, slags, and lipilli, by virture of their small albedo and color characteristics, resemble the lunar surface. This is also confirmed by spectrophotometric data. A study of the indicatrices of reflection shows that volcanic ash has a symmetrical indicatrix, and, therefore, cannot be abundant on the Moon.

Card 1/2

L 26939-65

ACCESSION NR: AP5006009

Areas of lapilli and especially flows of lava lumps, covered by a crust of cellular slags, have the same type of indicatrix as the lunar surface, i.e., elongated in the direction of the light source. However, the elongation is smaller than in the case of the Moon, indicating a less rugged relief pattern. Thus, according to photometric data, there is a similarity between the lunar surface and terrestrial volcanic formations; however, the results of thermoelectric, radioastronomical, and radar observations show a considerable difference between them. The basic objection against the theory of a volcanogenic origin of the lunar surface is its exceptional photometric uniformity. It is more probable, therefore, that the hypothesis is justified, according to which the outer cover of the lunar surface was created not by volcanic activity but by some exogenic cosmic factors, as, for example, meteoric collisions whose effects were homogenous on all points of the lunar surface. [JJ]

ASSOCIATION: Astronomicheskaya observatoriya Leningradskogo gos. universiteta (Astronomical Observatory of the Leningrad State University)

SUBMITTED: 15May64 ENCL: 00 SUB CODE: AA

NO REF SOV: 014 OTHER: 002 ATD PRESS: 3189

Card 2/2

3

L 24525-65 FBD/EWT(l)/EWG(v)/FCC/EWA(d)/EEC-4/EEC(t) Po-4/Pe-5/Pq-4/Pae-2/Pt-10/
Pl-4 SSD(a)/AFWL/SSD(b)/SSD/BSD/RAEM(a)/AFETR/ESD(t) GW/WS S/ 874
ACCESSION NR AM4040598 BOOK EXPLOITATION

Vyazanitsyn, V. P.; Gnevyshev, M. N.; Dobrovol'skiy, O. V.; Krat, V. A.; Markov, A. V.; Molchanov, A. P.; Sobolev, V. M.; Sharonov, V. V.

A course in astrophysics and stellar astronomy. v. 3 (Kurs astrofiziki i zvezdnoy astronomii. t. 3), Moscow, Izd-vo "Nauka", 1964, 375 p. illus., biblio., indices. 2,150 copies printed.

TOPIC TAGS: astrophysics, stellar astronomy

TABLE OF CONTENTS [abridged]:

Foreword -- 7
Part 1. The Sun
Ch. I. Introduction -- 9
Ch. II. Linear spectrum of the sun -- 24
Ch. III. Structure of the photosphere; granulation, spots, flares -- 41
Ch. IV. Chromosphere -- 69
Ch. V. Protuberances -- 108
Ch. VI. Chromosphere flares -- 130
Ch. VII. Solar corona -- 144

Card 1/2

L 24525-65
ACCESSION NR AM4040598

7

SUB CODE: AA SUBMITTED: 18Feb64 NR REF SOV: 135

OTHER: 107

Card 2/2

SHARKOV V.I.

Experience gained from a comparison of the indicators of scattering of the lunar surface and the telluric pyroclastic covering. Izv. Kom. po fiz. plan. no.4:24-27 Ag '63. (MIRA 16:5)

1. Astronomicheskaya observatoriya Leningradskogo gosudarstvennogo universiteta, Leningrad.

L 58971-65 EWT(1)/EWG(v) Po-4/Pe-5/Pae-2 GW

ACCESSION NR: AT5018689 UR/2955/65/000/002/0003/0018

AUTHOR: Sharonov, V. V. (Deceased)

30
B+1

TITLE: The problem of lunar surface matter

SOURCE: AN SSSR. Kosmos, no. 2, 1965, 3-18

TOPIC TAGS: planetary astronomy, meteoric slag theory, lunar landing, lunar surface, moon

ABSTRACT: A comprehensive discussion of the material comparing the lunar surface is presented. Astronomical observations conducted from the earth have not answered the question of the nature of the lunar surface, since the moon has no radiation of its own and the spectrum of the reflected solar light provides very sparse information. Photometric observations indicate that the lunar surface has a uniformly dark, grayish-brown color. In order to compare the albedo and the color of the moon with some terrestrial matter, the Laboratory of Planetary Astronomy at the University of Leningrad made measurements of the optical properties of several thousand samples of minerals, rocks, and meteorites. The comparison led to the conclusion that the matter comprising the lunar surface differs from all known types of terrestrial rocks. The only terrestrial matter similar in coloration to the lunar

Card 1/3

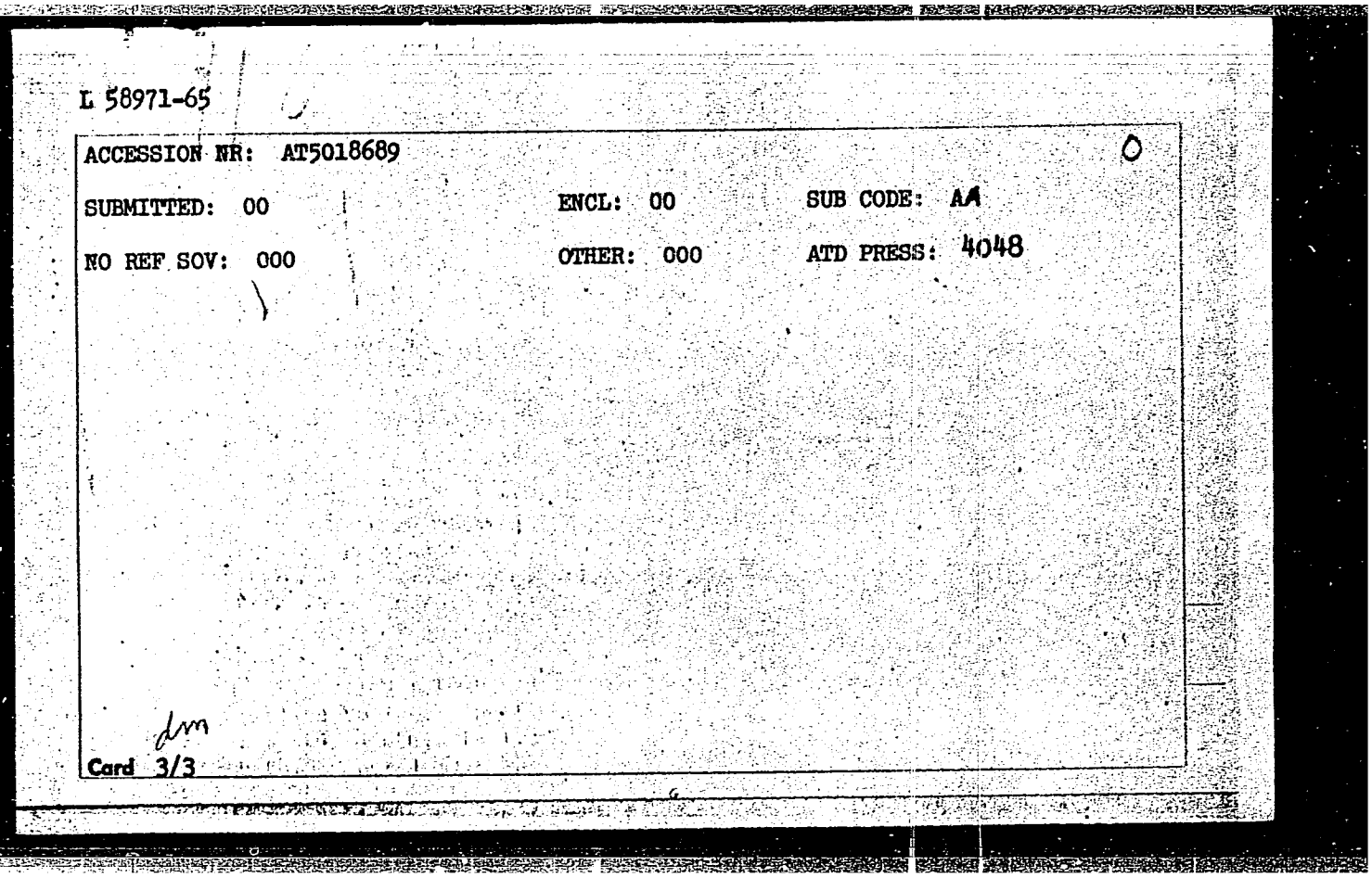
L 58971-65

ACCESSION NR: AT5018689 O

surface was pyroclastic material or volcanic slag. However, the origin of the slag on the moon, according to N. N. Sytinskaya's theory, is not volcanic, but meteoric. Since the moon has no atmosphere which would burn up the smaller particles and slow down the larger ones, each particle hits the moon's surface with full cosmic velocity, reaching tens of kilometers per second. The heat of collision so generated vaporizes not only the meteoric particle, but part of the surface matter as well. The rock vaporizes and is transformed into a porous slaggy mass of dark color due to disintegration of iron-bearing minerals and liberation of black ferric oxides. Since meteoric particles fall uniformly over the entire lunar sphere, the entire surface cover has become a spongy, slaggy matter. On the basis of data obtained by the Soviet rocket of 4 October 1959, it is noted that the dark side of the moon has the same porous structure of surface matter as does the visible side. Investigations of the temperature of the lunar surface showed that it has very low heat conductivity---1000 times lower than solid terrestrial rock and 10 times lower than such spongy material as pumice. The temperature gradient, i.e., the increase of temperature per 1 m in depth, is 1.6C for the outer lunar layer. This exceeds that of the earth (0.03C per 1 m). Thus, at a depth of 50 km, the temperature of the moon should be about 1000C (hypothesis of "the moon's hot interior"). [JJ]

ASSOCIATION: none

Card 2/3



L 58971-65

ACCESSION NR: AT5018689

SUBMITTED: 00 ENCL: 00 SUB CODE: AA

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4048

dm

Card 3/3

SHARONOV, Vsevolod Vasil'yevich, prof. [deceased]; KULIKOV, G.S., red.; BRONSHTEN, V.A., red.

[The planet Venus] Planeta Venera. Moskva, Nauka, 1965. 251 p. (MIRA 19:1)

SHAPOLOV, V.V.

Climatology of noctilucent clouds according to observations during the IGY period. Meteor. issl. no.9:143-149 '65.
(MIRA 19:1)

L 15411-66 EWT(1) JW

ACC NR: AR5018944 SOURCE CODE: UR/0269/65/000/007/0061/0062

AUTHOR: Sharonov, V.V.

32
B

ORG: none

TITLE: Deductions made from the preliminary pictures of the lunar surface obtained by the "Ranger VII" probe

12,55

17

SOURCE: Ref. zh. Astronomiya. Otdel'nyy vypusk, Abs. 7.51.517

REF SOURCE: Astron. tsirkulyar, no. 310, noyabrya 30, 1964, 1-4

TOPIC TAGS: lunar photography, lunar surface, lunar reflectivity, lunar optic property, lunar crater, lunar topography

TRANSLATION: Studies of lunar surface pictures transmitted by the television equipment on Ranger VII are analyzed. The following deductions are made: 1) small craters are not of volcanic, or shock origin, 2) most probable cause of the formation of small craters is an external (meteoric) force; the hypothesis that they may have been caused by fragments ejected in the formation of larger craters is widely contradicted, 3) the decreasing graduation of craters is carried down to centimeter sizes, 4) larger meteorites create craters, whereas fragments of meteoric substances level down unevenesses.

SUB CODE: 03

Card 1/1

UDC: 523.36

ACC NR: AR6020772 SOURCE CODE: UR/0269/66/000/003/0070/0071

AUTHOR: Sharonov, V. V.

TITLE: An experiment in comparing indicatrices of dissipation of the lunar surface and the Earth's pyroclastic cover

SOURCE: Ref. zh. Astronomiya, Abs. 3.51.589

REF SOURCE: Izv. Komis. po fiz. planet. vyp. 4, 1963, 24-27

TOPIC TAGS: lunar surface, light reflection, albedo

ABSTRACT: In Kamchatka, in the summer of 1964, the author measured the reflectivity of volcanic covers under natural conditions by using a visual photometer. The indicatrix of reflection was determined for a smooth slope of the Avachinsk Volcano which was covered by volcanic sand and sprinkled abundantly with dark lapilli measuring 1 - 3 cm, and with larger pieces of slag. Data are given of the absolute values of the brightness coefficient r for several values of zenith distances of the Sun: $z\odot = 40^\circ$, 53°, and 68° for angles of relection from 0° to $\pm 80^\circ$ in intervals of 10°. The results obtained were compared with the indicatrix for the Moon. It was found that the curves for the Moon differed in the value of maximum r at $\varepsilon = z_\odot$, although qualitatively the curve had the same path as for the volcanic cover. The ratio of the value of r in maximum to that of r at $\varepsilon = 0$ was about two times higher for the Moon than for the

Card 1/2 UDC: 523.36

ACC NR: AP6020772

area studied. A conclusion was thus reached that the degree of pitting of the lunar surface was much greater than that of the pyroclastic material of the type studied. N. Orlova. [Translation of abstract]

SUB CODE: 03

Card 2/2

L 00933-67 EWT(1) IJP(c) JD/GW

ACC NR: AR6025339 SOURCE CODE: UR/0269/66/000/004/0019/0019

AUTHOR: Sharonov, V. V. 21

TITLE: Photographic irradiation as a source of errors in astrometric observations of the Moon and planets

SOURCE: Ref. zh. Astronomiya, Abs. 4.51.138

REF SOURCE: Tr. 16-y Astrometr. konfer. SSSR, 1963. M.-L., Nauka, 1965, 87-95

TOPIC TAGS: ~~astronomy~~, planetary photography, ~~planetary~~ astrometry, photographic irradiation error

ABSTRACT: The half-diameter magnitudes of planets obtained by visual observations, deviate by up to 1". The cause is that targeting upon the disk edge carries systematic errors, one of which is due to irradiation. The radius error enters fully into object coordinates of meridional observations, since in the presence of phase it is necessary to limit observations to the transit of only the light limbus. Edge effects, and particularly photographic irradiation, assert themselves stronger in photographic observations. Photographic irradiation, i.e. the washout of the disk edge image, has many causes: light dispersion in the emulsion, optical abberations, timing mechanism errors, influence of wind and shutter shocks, atmospheric turbulence, et c. For a more precise radius determination, edge photometry is resorted to. However, the question as to what density corresponds to the true location of the edge, remains unsolved: due

Card 1/2 UDC 522.982.7:523.4

L 08933-67

ACC NR: AR6025339

O

to phase influence and disk albedo differences, the disk adge has variable luminosity. It is noted that photoirradiation can be the cause of faulty opinions and conclusions, such as the "Wright effect" and N.A. Kozyrev's opinion about non-symmetry of the northern and southern hemispheres of Jupiter and Saturn, etc. [Translation of abstract].

SUB CODE: 03, 14

Card 2/2 nst

[illegible], Yu. A., [illegible] -- (diss) "Problems of specific prophylaxis and treatment of paratyphoid in calves." Moscow, 1956. 18 pp; (Moscow Veterinary Academy of the Ministry of Agriculture RSFSR); 150 copies; price not given; (KL, 21-60, 128)

AUTHORS: Ptitsyn, O. B., Sharonov, Yu. A. 57-12-8/19

TITLE: Internal Rotation in Polymer Chains and Their Physical Properties (Vnutrenneye vrashcheniye v polimernykh tsepyakh i ikh fizicheskiye svoystva). VI. Dimensions and dipole moments of polyvinyl chains with large branches (VI. Razmery i dipol'nye momenty polivinilovykh tsepey s massivnymi priveskami)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1957, Vol.27, Nr 12, pp. 2744-2761 (USSR)

ABSTRACT: Differing from all previous papers, the equations deduced here not alone take into consideration the interaction of the atoms immediately adjacent to the chain-binding in question, but also the interaction with the massive additious, for two atoms not connected to two neighouring atoms of the chain actually are able to approach each other to within a comparatively short distance on the occasion of an internal rotation in the molecules of low- and high-molecular compounds. Therefore the interaction between these atoms should by no means be neglected. The investigations conducted here show, that, if in the case of propane this interaction may, more or less, be neglected, this is in no case possible with butane. It is shown, that the equation for the potential energy must be replaced by another one, which takes into consideration the interaction (besides that of

Card 1/4

first order) of at least the second order. The process of ascertaining the mean value of configuration, however, leads to great difficulties. In the case of the polymers of the $(-CH_2-CR_2-)_n$- and of the $(-CH_2-CHR-)_n$-type, R denoting the massive additious, the interactions of the R-groups constitute by far the greater part of the interactions of second order. The interactions of the methylene group may be neglected in comparison with these. If, therefore, notation of the elements of the principal chain is rearranged in such a way, that the $-CH_2-CR_2-$ or the $-CH_2-CHR-$ elements correspond to the odd numbers and the $-CR_2-CH_2-$ or $-CHR-CH_2-$ elements to the even numbers, the quantities $W(\varphi_{i-1}, \varphi_1)$, corresponding to even "i" could be neglected. It is shown, that in such a case the chain energy decomposes into terms independent of each other and every term is dependent on the angles of internal rotation around the two successive links. From this it appears, that the chain-energy is no longer added up from the potential energy of separate elements,

Internal Rotation in Polymer Chains and Their Physical Properties (contd) 57-12-8/19

but from the potential energies of the separate monomeric units. Therefore the chain in this case represents a Markov-chain and the process of ascertaining the mean value of configuration may be conducted according to the methods employed in the papers (reference 1 to 7). Here only the polymers of the $(-CH_2-CR_2-)_n$ and $(-CH_2-CHR-)_n$ type are investigated. Interactions of third order are neglected. Equations are deduced, which express the dependence of the average dimensions and of the average dipole-moments in polyvinyle chains on the valence angles and on the parameters of internal rotation. Chains with symmetric $(-CH_2-CR_2-)_n$ and with unsymmetrical additious $(-CH_2-CHR-)_n$ were investigated, in the case of the latter isotactical and "sindiotactical" polymers. The formulae for h^2 and μ^2 obtained here are distinguished from previous ones in two respects:
1.) New terms occur here, containing the following parameters:

Card 3/4 $\eta_1=\overline{\cos \varphi_{2s} \cos \varphi_{2s-1}}$, $\eta_2=\overline{\cos \varphi_{2s} \sin \varphi_{2s+1}}$, and

57-12-9/19

AUTHORS: Ptitsyn, O. B., Sharonov, Yu. A.

TITLE: Internal Rotation in Polymer Chains and Their Physical Properties (Vnutrenneye vrashcheniye v polimernykh tsepyakh i ikh fizicheskiye svoystva). VII. On the Configuration of Polymer Chains in the Crystalline State and in Solution (VII. Konfiguratsiya polimernykh tsepey v kristallicheskom sostoyanii i v rastvore).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1957, Vol. 27, Nr 12, pp. 2762-2773 (USSR)

ABSTRACT: In this paper a method for the evaluation of the parameters characterizing the thermodynamic elasticity of polymer chains in a solution is proposed, starting from a crystalline configuration of the chains. The method is based on the assumption, that the polymer chains crystallize in that configuration, which is the most stable in a solution. Apart from this, the method is based on the utilization of the symmetric properties of polymer chains of the $(-CH_2-CR_2-)n$ - and $(-CH_2-CHR-)_n$ - type. This method was here employed for the determination of the configuration of the polyisobutylene

Card 1/2

chain and of the chain of the isotactical polystyrole. With the help of the equations obtained in the previous paper (reference 6) and of the configurations obtained in this way the average dimensions of the polyisobutylene chain and of the chain of the isotactical polystyrole in ideal solvents are computed, as well as the average dipole moments of the para-halogenic substituent of the isotactical polystyrole. Although the experimental data refer to non-tactical and not to isotactical polymers, a comparison of the data obtained here with the experimantal results is given here. M.V. Vol'kenshteyn collaborated in this investigation. There are 2 figures, 2 tables, and 43 references, 12 of which are Slavic.

ASSOCIATION: Institute for Highly Molecular Compounds AN USSR, Leningrad (Institut vysokomolekulyarnykh soyedineniy AN SSSR Leningrad).

SUBMITTED: March 21, 1957.

AVAILABLE: Library of Congress

SHARONOV, Yu. A.

Ptitsyn, O.B., Birshteyn, T.M. and Sharonov, Yu. A. [Institut vysoko-molekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds AS USSR)] Theory on Dipole Moments of Polymeric Molecules

(The Physics of Dielectrics; Transactions of the All-Union Conference on the Physics of Dielectrics) Moscow, Izd-vo AN SSSR, 1958. 245 p. 3,000 copies printed.

This volume publishes reports presented at the All-Union Conference on the Physics of Dielectrics, held in Dnepropetrovsk in August 1956, sponsored by the "Physics of Dielectrics" Laboratory of the Fizicheskiy institut imeni Lebedeva An SSSR (Physics Institute imeni Lebedev of the AS USSR), and the Electrophysics Department of the Dnepropetrovskiy gosudarstvennyy universitet (Dnepropetrovsk State University).

SHARONOV, Yu. A.

O. B. Ptitsyn, G. M. Birshteyn, and Yu. A. Sharonov, "Interior Rotational Isomerism in Polyisobutylene and Polystyrene."

report presented at the Symposium on Concepts of Conformation in Organic Chemistry which took place in Moscow at the IOKh AN SSSR (Institute of Organic Chemistry, AS USSR) from September 30 to October 2, 1958.

Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1959, No. 3, 561-564.

48-22-3-23/30

AUTHORS: Ptitsyn, O. B., Birshteyn, T. M., Sharonov, Yu. A.

TITLE: Theory of the Dipole-Moments of Polymeric Molecules (Teoriya dipol'nykh momentov polimernykh molekul) Report Theses (Tezisy doklada)
For Details Consult T. M. Birshteyn, O. B. Ptitsyn, ZhTF, 24, 1998 (1954), O. B. Ptitsyn, Yu. A. Sharonov, ZhTF, 27, 2744, (1957)(Podrobno sm. T. M. Birshteyn, O. B. Ptitsyn, ZhTF, 24, 1998 (1954) O. B. Ptitsyn, Yu. A. Sharonov, ZhTF, 27, 2744, (1957)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1958, Vol. 22, Nr 3, pp. 324 - 324 (USSR)

ABSTRACT: 1) A theory of the dipole-moments of the polymer-molecules was proposed which connects the mean square of the dipole-moment of the polymeric chain with its chemical structure, with the stereoisomerism and with the retarding of inner rotation.

Card 1/4 The theory refers to the polymers of the type $(-CR_2-)_n$,

48-22-3-23/30

Theory of the Dipole-Moments of Polymeric Molecules. **Report Theses** . For Details Consult T. M. Birshteyn, O. B. Ptitsyn, ZhTF, 24, 1998 (1954) O. B. Ptitsyn, Yu. A. Sharonov, ZhTF, 27, 2744, (1957)

$(-CH_2-CR_2-)_n$, $(-CH_2-CHR-)_n$ and $(-CHR-)_n$, where R is a polar pendant(privesok).Besides the first approximation of the theory which takes only account of the interaction between the nearest chain-series, also a second approximation was obtained which takes account also of more far distanced series. 2) It was shown that the dipol-moment can largely depend on the stereoisomerism of the chain: with chains of the type $(-CH_2-CHR-)_n$ and especially $(-CHR-)_n$ the dipole-moment is substantially smaller with the dl- than with the dd- position of the polar groups (under equal conditions of inner rotation in the chain). It was also shown that in chains of the type $(-CH_2-CHR-)_n$ with closely connected dipoles the dipole-moment depends on the circumstance which pendants - polar or non-polar - mutually

Card 2/4

48-22-3-23/30

Theory of the Dipole-Moments of Polymeric Molecules.
Report Theses. . For Details Consult T. M. Birshteyn, O. B. Ptitsyn, ZhTF, 24, 1998 (1954) O. B. Ptitsyn, Yu. A. Sharonov, ZhTF, 27, 2744,(1957)

repel more intensely. When an inner rotation takes place in polar pendants, then the dipole moment does not depend on the structure in the first approximation. 3) A comparison of the theory with the experimentally found values according to poly-p-halogen styrenes and polychlorovinyl show that in the chains of these polymers the phenyl series or the chlorine atoms repel mutually more intensely than the hydrogen stoms. The degree of retardation of rotation in these polymers which was determined according to dipole moments in accordance with experimentally obtained data corresponds approximately to the values determined from the size of the molecules and from the photoelastic moment.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR (Institute for High-Molecular Compounds AS USSR)

Card 3/4

48-22-3-23/30

Theory of the Dipole Moments of Polymeric Molecules.
Report Theses. . For Details Consult T. M. Birshteyn, O. B. Ptitsyn, ZhTF, 24, 1998 (1954) O. B. Ptitsyn, Yu. A. Sharonov, ZhTF, 27, 2744,(1957)

AVAILABLE: Library of Congress

1. Polymeric molecules--Dipole moments--Theory

Card 4/4

29743
S/190/61/003/011/015/016
B110/B147

15.8520

AUTHORS: Vol'kenshteyn, M. V., Sharonov, Yu. A.

TITLE: Effect of fritting of polymer glasses on the course of specific heat in the softening range

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 11, 1961, 1739-1745

TEXT: Aim of the present work was to obtain exact quantitative data on the dynamics of vitrification and softening processes, and to investigate the effect of fritting on the softening of glass. Changes of the amorphous structure and increase of the interaction of the kinetic units take place during prolonged fritting. The irregular specific heats were measured S. N. Zhurkov and B. Ya. Levin (Ref. 13: Sb. rabot, posvyashchennyy 70-letiyu akad. A. F. Ioffe (Collection of papers dedicated to the 70th anniversary of Academician A. F. Ioffe), Izd. AN SSSR, M.-L., 1950, p. 260) found that the specific heat has a maximum in the softening range, the position and height of which depend on the heating rate The fritting of samples should additionally be taken into

Card 1/3

Effect of fritting of polymer ...

consideration. In order to measure the heat effects linked with the rate of relaxation, concentrated polymer solution was applied to three copper wires. A 0.14 mm wire of 98 mm length served for heating, the other 0.05 mm wires of ~17 mm length each for temperature measurements and for producing adiabatic conditions. A strip of a 0.15 to 0.20 mm thick polymer layer was obtained, which was coiled up and placed into a vacuum flask. The thermal equilibrium occurred in fractions of a second at a heating rate of 0.5 degrees/min. Measurement was made at $5 \cdot 10^{-5}$ mm Hg. A thin, nickel-plated Al foil which was wrapped with $R_{HЭ}$ (R_{NE}) heating wire and two coils of $R_{AЭ1}$ (R_{AE1}) and $R_{AЭ2}$ (R_{AE2}) Cu wire for adiabatic conditions served for preventing heat radiation. The heating circuit of the foil contained the rheostats R_1 and R_2 (Fig. 2). Thyratron relay IV and the bridge circuit diagram I with mirror galvanometer in the diagonal bridge kept the temperature of the foil $\geq 0.03^{\circ}C$ lower than that of the sample. The bridge consisted of the resistors R_{AO} (R_{AO}) and $R_{AЭ1}$ (R_{AE1}). The photoresistor ФСК-2 (FSK-2) was the pickup for the thyratron relay. In order to keep the sample-foil temperature difference constant, the vacuum

Card 2/Ø 5

29743
S/190/61/003/011/015/016
B110/B147

[illegible] of fritting of polymer ..

flask containing the apparatus was placed in an electric furnace [illegible] cooler. The rate of cooling from temperatures $> T_v$ to the fritting [illegible] degree/min to 6 degrees/min. The third bridge circuit diagram III with the mirror galvanometer P3C-47 (GZS-47) in the diagonal bridge served for temperature measurement. The temperature of the sample was measured between 0 and 120°C with 0.01°C relative accuracy. The [illegible] specific heat of polymer and Cu wire was calculated according to: $C_p = 0.239\ u^2/Rt$, where u = voltage of the heating battery; R = mean resistance of the heating wire in the range of temperature measurement; t = time required for heating by 1°C. The measurement interval was 0.5°C, in the softening range 0.25°C. Dissolved and reprecipitated polyvinyl acetate (PVA) and polystyrene (PS) (molecular weight $\sim 10^6$) were investigated. Fritting took place at 21°C for 24 hr. For PVA, the curves $c_p = f(T)$ pass a maximum in the softening range. Amount and temperature of the maximum increase with increasing heating rate. The amount increases linearly with increasing fritting time (Fig. 4). Relaxation times are

Card 3/[illegible] 5

... of fritting of polymer...

measured for $< T_v$ in 10 hr so that equilibrium is approximately achieved during prolonged fritting. A maximum of C_p may occur during subsequent quick heating. It is not observed when fritting does not occur. Enthalpy also depends on the fritting time. Its change was estimated according to the change of the total amount of heat which was passed to the polymer at subsequent heating from the fritting temperature to $> T_v$. Glass may reach the state with H_o at $T_c < T_v$: (1) during cooling from $T > T_v$ to T_c at the rate q_1 and subsequent fritting at T_c; (2) during cooling at another rate $|q_2| < |q_1|$ without fritting (Fig. 6). Cooling from $T > T_v$ to 21°C at 0.2 degrees/min without fritting corresponds to cooling at 6 degrees/min with subsequent fritting for 17 hr at the same temperature (Fig. 5, Curve 3). The same results were obtained with PS. The theoretical evaluation will be made in the next study. A. V. Sidorovich [illegible] Tuvshinskiy (Ref. 14: Zavodsk. labor., [illegible]) [illegible]

Card 4/5

Effect of fritting of polymer ..

11 Soviet and 3 non-Soviet. The two most recent references to English-language publications read as follows: R. Davies, G Jones, Advances in Physics, 2, 370, 1953; G. Jones, Glass, Methuen, 1956

ASSOCIATION Institut vysokomolekulyarnikh soyedineniy AN SSSR
(Institute of High-molecular Compounds AS USSR)

SUBMITTED: January 1, 1961

Fig. 2. Circuit diagram of the electrical part of the installation

Fig. 4. Dependence of $C_p(T)$ of PVA on the fritting time at 21°C after cooling at a rate of 6 degrees/min

Legend: Fritting time: (1) 17 hr; (2) 2 days; (3) 7 days; (4) without fritting; (1); (2); (3); (Δ) 0.5 degrees/min; (×) 0.9 degrees/min; (A) C_p, cal/g·degree; (B) temperature.

Card 5/[illegible]

S/190/62/004/006/021/026
B101/B110

15.8050

AUTHORS: Sharonov, Yu. A., Vol'kenshteyn, M. V.

TITLE: Co-operative effects in the annealing and softening of polyvinyl acetate

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 6, 1962, 917-921

TEXT: In continuation of an earlier paper (Vysokomolek. soyed., 3, 1739, 1962) concerning the effect of annealing on the softening of noncrystallizing glassy polymers, the same method was used to determine the relaxation time τ and, at 21 and 29.5°C, the specific heat, C_p, of amorphous polyvinyl acetate (PVA). The equation $1/\tau = d \ln(H - H_e)/dt$ was experimentally checked; H = enthalpy, H_e = enthalpy of the equilibrium state. The following was found: $\tau = \tau_e \exp[-a(H - H_e)]$, where τ_e is the value of τ at $H = H_e$, $a = 7.83$ cal·g^{-1}; and $\tau_e = \tau_o \exp[-bT(°C)]$, where $\tau_o = 2.0 \cdot 10^{21}$ hr, $b = 1.32$ deg^{-1}. In the range $T < T_s$ (T_s = softening

Card 1/3

temperature), τ depends not only on H but also on H_e. The dependence of the function $C_p(T)$ on $H - H_e$ with different times of annealing showed that $C_{p\ max} = \infty$ after 40 days of annealing. Integration of $C_p(T)$ (Fig. 5) showed that a discontinuity of enthalpy occurred at the softening temperature ($40^\circ C$). The amorphous polymer imitates a phase transition of the first order. In addition, an irregularity in the range of $C_{p\ max}$ was observed when heating PVA annealed for 40 days, which showed a slight temperature drop (from ~ 44.9 to $\sim 44.7^\circ C$) during ~ 100 sec at a heating rate of 0.23 cal/g·min. These results are interpreted as proof of the co-operative mobility of the macromolecules, which is particularly noticeable near T_s. There are 6 figures and 1 table. The most important English-language references are: A. J. Kovacs, J. Polymer Sci., 30, 131, 1958; H. Temperley, Changes of State, London, 1956.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds AS USSR)

SUBMITTED: April 17, 1961

S/181/63/005/002/034/051
B102/B186

AUTHORS: Sharonov, Yu. A., and Vol'kenshteyn, M. V.

TITLE: Enthalpy relaxation in cooperative effects on polystyrene in the vitrification region

PERIODICAL: Fizika tverdogo tela, v. 5, no. 2, 1963, 590 - 598

TEXT: The authors use the same calorimetric method as they have used previously (Vysokomolek. soyedin. 4, 917, 1962) for studying the change in H on annealing polyvinyl acetate (PVA) at $T > T_v$. They now determine the temperature dependences of the specific heat c and the enthalpy H for polystyrene (PS) and calculate the relaxation time τ from the relation $1/\tau = -d \ln (H-H_e)/dt$. $H-H_e$ denotes the difference between nonequilibrium and equilibrium enthalpies. The approach of H to H_e was investigated from the positive ($H > H_e$, $T < T_v$) as well from the negative side ($H < H_e$, $T > T_v$); $T_v = 99^{\circ}C$ is the vitrification temperature. The results obtained for PS are compared with those for PVA. The following was found: As in the case

Card 1/2

VOLKENSHTEYN, M. V.; SHARONOV, Yu. A.

"Calorimetric investigation ofsoftening and annealing of polymeric glasses."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

ACCESSION NR: AP4034902 S/0181/64/006/005/1270/1280

AUTHORS: Sharonov, Yu. A.; Vol'kenshteyn, M. V.

TITLE: Calorimetric investigation of softening and annealing amorphous polymers

SOURCE: Fizika tverdogo tela, v. 6, no. 5, 1964, 1270-1280

TOPIC TAGS: calorimetry, polymer, annealing, vitrification, enthalpy, polyvinyl acetate

ABSTRACT: This is a continuation of the authors' previous work on calorimetric studies of softening and annealing amorphous polymers (Vy*sokomol. soyed., 3, 1739, 1961; 4, 917, 1962; FTT, 5, 590, 1963). They studied the kinetics of enthalpy relaxation of polyvinyl acetate, within the softening interval, to equilibrium values under adiabatic annealing. As with polystyrene, the relaxation time at a constant temperature below the vitrification point decreases exponentially with decrease in degree of deviation of the system from equilibrium, and this is characterized by the enthalpy difference. At any particular temperature and enthalpy difference, the relaxation time depends on the thermal history of the sample. This history may be computed by introducing a parameter of absolute relaxation time

Card 1/2

ACCESSION NR: AP4034902

(depending on the annealing time at temperatures below the vitrification point and leading to a single temperature value). The heat capacity in the softening interval, as computed by means of a function relating absolute relaxation time, temperature, and enthalpy difference, agrees with experimental values. "We thank Ye. V. Kuvshinskiy for his valuable remarks." Orig. art. has: 6 figures, 1 table, and 14 formulas.

ASSOCIATION: Institut vy*sokomolekulyarny*kh soyedineniy, AN SSSR Leningrad (Institute of High-Molecular Compounds AN SSSR)

SUBMITTED: 020ct63 ENCL: 00

SUB CODE: SS, MT NO REF SOV: 010 OTHER: 033

Card 2/2

DERBENEVA, A.; SHARONOVA, A.

Lyrids in 1956. Astron.tsirk.no.170:22-23 '56. (MLRA 9:10)

1.Stalinabadskaya astronomicheskaya observatoriya, Stalinabadskoye otdeleniye Vsesoyuznogo astronomo-geodezicheskogo obshchestva.
(Meteors--April)

IVOYLOV, A.S.; SHARONOVA, A.V.

Determination of minerals by X-ray analysis. Rent.min.syr. no.1: 153-155 '62. (MIRA 16:3)

1. Irkutskiy gosudarstvennyy institut redkikh metallov.
(X-ray crystallography)

30488
S/194/61/000/008/023/092
D201/D304

3.5800

AUTHORS: Karpusha, V.Ye., Protopopov, N.G., Sternzat, M.S. and Sharonova, G.S.

TITLE: The M-45 automatic recorder of average wind velocity and direction

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 8, 1961, 18, abstract 8 V152 (Tr. Gl. Geofiz. observ., 1960, no. 103, 93-102)

TEXT: The wind speed is measured by a 3-cup vane, connected through a reducing gear selsyn transducer БС-404 (BS-404). A similar selsyn is connected to the axis of a weather vane measuring the wind direction. The automatic recorder is connected to the unit by an 8-core cable. The average velocity of the wind is determined from the angle of rotation of the receiving selsyn every 10 minutes by means of a mechanical arrangement. The latter consists of a reduction gear with a ratchet, whose pawl frees the output

Card 1/2

The M-45 automatic recorder...

shaft every 10-minute period. The output shaft is connected to the step of the recorder pen which is pressed down by the unbalance weight at the end of every period and then braked. The wind direction is recorded by a 3-pen recording system operated by the receiving selsyn. Only one pen is operated, which is changed every full revolution of the weather vane. The recording is made on a single chart strip drawn by a synchronous motor. The accuracy of the recorder is ± 5% for velocity and ± 10% for direction. 7 figures. 4 references. [Abstracter's note: Complete translation]

Card 2/2

L 16899-66 EWT(d)/T/EWP(1) IJP(c) BB/GG/GS

ACC NR: AT6003580 SOURCE CODE: UR/0000/65/000/000/0338/0354

AUTHOR: Sharonova, I. M.

66
61
B+1

ORG: None

TITLE: Application of the dynamic programming method to the solution of variational problems in aircraft dynamics

SOURCE: Issledovaniya po dinamike poleta (Research on flight dynamics), no. 1 Moscow, Izd-vo Mashinostroyeniye, 1965, 338-354

TOPIC TAGS: dynamic programming, variational problem, aerodynamics, computer application, airborne computer

ABSTRACT: The author discusses the applicability of the dynamic programming method as it applies to the variational problems encountered in aircraft flight dynamics. The method described enables determination of optimal aircraft glide trajectories. The aircraft is considered as a point of constant mass. The rotation and curvature of the Earth are disregarded. The movement of the craft takes place in the vertical plane under the effect of the forces of gravity and of aerodynamic forces. The matrix type method can be used for the solution of problems involving gliding with maximum and minimum range,

Card 1/2 UDC 629.197.7.005

2

L 16899-66

ACC NR: AT6003580

5

and minimum time-to-climb problems. The method makes it possible to satisfy boundary conditions on both ends of the trajectory and of introducing certain limitations (minimal or maximal flight speeds as a function of altitude, uniform glide temperature, etc.). In seeking an optimal trajectory, the cells of the matrix may be quite large, then reduced in the vicinity of the trajectory. This results in a significantly fewer number of calculations. The matrices may be used directly for the comparison of different trajectories, eliminating the need to solve certain differential equations by numerical methods. Moreover, this method permits the solution not only of one specific problem, but the finding of a whole family of optimal trajectories corresponding to various initial conditions. The use of a graphic representation of such a family of optimal trajectories is of definite advantage when programming flights for an on-board computer. A somewhat more complicated version of the method is also presented. Orig. art. has: 5 figures and 17 formulas.

SUB CODE: 01,09 / SUBM DATE: 02Aug65 / ORIG REF: 007 / OTH REF: 003

Card 2/2 SM

SHARONOVA, K., inzh.

Automatic machine for meat pies. Obshchestv. pit. no.11:32-33 N '61. (MIRA 15:2)
(Restaurants, lunchrooms, etc.—Equipment and supplies)

SHARONOVA, K., inzh.

Apparatus for washing food products in running water. Obshchest. pit. no.3:34-35 Mr '62. (MIRA 15:4)

1. Otdel tekhnologicheskikh protsessov Vsesoyuznogo nauchno-issledovatel'skogo i eksperimental'no-konstruktorskogo instituta torgovogo mashinostroyeniya.
(Restaurants, lunchrooms, etc.--Equipment and supplies)

SHAROKOVA, M.

Georginy [Dahlias]. Moskva, "Mosk. rabochii," 1952. 64 p.

SO: Monthly List of Russian Accessions, Vol. 7, No. 3, June 1954.

S/122/60/000/005/008/017
A161/A130

AUTHORS: Artamokhin, N. I., Sharonova, M. S.

TITLE: Glues application in machine industry

PERIODICAL: Vestnik mashinostroyeniya, no. 5, 1960, 35-40

TEXT: The article gives a brief general information on the existing industrial glue grades developed by the Soviet scientific research institutes, i.e., their physical and mechanical properties, application, preparation of material surfaces for gluing, the basic gluing techniques. 30 glue trade names indicate applications for wood and various plastics including ftoroplast-3 and ftoroplast-4. General recommendations are given concerning the choice of glue, e.g., that grounding with БФ-2 (BF-2) glue on metal surfaces makes possible connections of metal with other materials without heating; an underlayer of ПУ-2 (PU-2) coated on special НО-68-1 (NO-68-1) rubber ensures firm bond with many other materials, though without this ground this resin cannot be joined with the available glues; underlayer of ВИАМ-Ф9 (VIAM-F9) protects wood from acidous components in phenol-formadehyde glues, etc., glues can be affected by materials containing alkaline matters; glues for metals must not contain corrosive matters.

Card 1/2

Glues application in machine industry

S/122/60/000/005/008/017
A161/A130

The 30 glue grades indicate only possible exclusive applications (as connecting rubber with polyethylene or silicate glass, etc.), but in general rubber can be glued by many special glue grades. It is stressed that skill and care are necessary for good glue joints. There are 3 tables.

Card 2/2

NIKITIN, V.N.; SHARONOVA, N.A.

Spectroscopic study of hydrogen bonding in polymers of o- and p-carbethoxyphenylmethacrylamide and the molecular chain conformation. Vysokom. soed. 6 no.1:144-148 Ja'64.
(MIRA 17:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

Sharonova, N. F.

3242. DEPHENOLIZATION OF TAR WATER FROM BALTIC SHALES WITH BUTYL ACETATE. Ivanov, B.I., Kozak, Yu.A. and Sharonova, N.F. (Trud. Vsesoyuz. nauch.-issled. inst. Pererab. Slan. (Proc. Inst. Treat. Shale, U.S.S.R.), 1954, (2), 189-199; abstr. in Ref. Zh. Khim. (Ref. J. Chem., Moscow), 1955, (18), 41150). Multi-stage "pseudo-countercurrent" extraction with 10% butyl acetate is described.

IVANOV,B.I.; SHARONOVA,N.F.; KOZAK,Yu.A.

Distribution of phenols in the "butyl acetate-shale tar water" system. Trudy VNIIPS no.3:90-100 '55. (MLRA 8:12)
(Baltic Sea region--Oil shales) (Hydrocarbons)

IVANOV, B.I.; SHARONOVA, N.F.

Effect of the composition of butyl acetate and mixtures of phenols and acetone on the dephenolation of tar water. Trudy VNIIPS no.5:289-293 '56. (MLRA 10:5)

(Acetic acid) (Phenols) (Acetone)
(Tar)

IVANOV, B.I.; SHARONOVA, N.F.; KOZAK, Yu.A.

Decontamination of tar water by steaming, simultaneously obtaining chemical products. Trudy VNIIPS no.5:294-303 '56. (MLRA 10:5)
(Tar)

IVANOV, B.I.; SHARONOVA, M.F.; YEVSTRATOVA, Z.F.

Chemical losses of butyl acetate in the process of dephenolation of tar waters. Trudy VNIIPS no.5:304-310 '56. (MLRA 10:5)
(Acetic acid) (Tar)

IVANOV, B.I.; SHARONOVA, N.F.; KOZAK, Yu.A.

Phenols in shale-tar water and prospects for their use. Trudy VNIIPS no.7:232-236 '59. (MIRA 12:9)
(Oil shales) (Phenols)

IVANOV, B.I.; SHARONOVA, N.F.; KOZAK, Yu.A.; ISAKOV, G.A.

Industrial experience of the section for the recovery of phenols from tar water at the shale-processing combine in Kohtla-Jāve. Trudy VNIIPS no.7:247-260 '59. (MIRA 12:9)
(Kohtla-Järve--Oil shales) (Phenols)

IVANOV, B.I.; KOZAK, Yu.A.; SHARONOVA, N.F; Prinimala uchastiye: GOLUB, M.V.

New solvents for the dephenolization of waste water. Trudy VNIIPS no.7:261-268 '59. (MIRA 12:9)
(Phenols) (Solvents) (Sewage--Purification)

IVANOV, B.I.; ZELENIN, N.I.; SHARONOVA, N.F.; KOZAK, Yu.A.

Polymer formation and corrosion of the Kohtla-Jarve - Leningrad gas pipeline. Trudy VNIIT no.8:106-112 '59.
(MIRA 13:4)

(Gas, Natural--Pipelines) (Gas pipes--Corrosion)

IVANOV, B.I.; SHARONOVA, N.F.; SHUL'MAN, Z.F.

Dephendization of shale tar water by means of an anionite.
Trudy VNIIT no.8:213-219 '59. (MIRA 13:4)
(Oil shales) (Ion exchange) (Phenols)